EXECUTIVE SUMMARY

Objective
• Improve city operations and overall quality of life, while maintaining current costs

Strategy
• Secure top-down leadership and support from Santander’s mayor to bridge gaps between different departments and help create more transversal government operation
• Leverage relationships with local universities to expand technical capacity and develop additional applications

Solution
• Citywide initiative that includes network of more than 25,000 sensors that monitor traffic levels, public transportation options, noise and particulate levels, lighting levels, water quality, and parking availability
• System also provides open access to the data and allows city residents to interact remotely with city officials

Impact
• 80 percent reduction in downtown traffic congestion due to smart parking application. This has reduced travel times and environmental pollution.

Background
In January 2014, Cisco released the results of an in-depth analysis of the economic benefits of the Internet of Everything (IoE) for the public sector. Cisco’s model revealed that some $4.6 trillion in “Value at Stake” would result from the adoption of IoE capabilities across 40 key public sector use cases over the next 10 years, including smart water, smart buildings, smart energy, smart parking, and more (http://bit.ly/1aSGIzn).

As a next phase of its analysis, Cisco engaged Cicero Group, a leading data-driven strategy consulting and research firm, to undertake a global study of IoE capabilities across these 40 use cases — how the best public sector organizations are “connecting the unconnected,” as Cisco terms it. To that end, Cicero Group conducted interviews with dozens of leading public sector jurisdictions — federal, state, and local governments; healthcare organizations; educational institutions; and non-governmental organizations (NGOs) — to explore how these global leaders are leveraging IoE today.

The research examined real-world projects that are operational today, are being delivered at scale (or through pilots with obvious potential to scale), and that represent the cutting edge of public sector IoE readiness and maturity. The aim of the research was to understand what has changed in terms of the jurisdictions’ people, processes, data, and things, and how other public sector organizations can learn from (and replicate) the trail blazed by these global IoE leaders. In many cases, these jurisdictions are Cisco customers; in others, they are not. The focus of these jurisdictional profiles, therefore, is not to tout Cisco’s role in these organizations’ success, but rather to document IoE excellence, how public sector entities are putting IoE into practice today, and to inform a roadmap for change that will enable the public sector to address pressing challenges on multiple fronts by drawing on best practices from around the globe.
About Santander

Santander is the capital of the autonomous community and historical region of Cantabria, situated on the north coast of Spain. Located east of Gijón and west of Bilbao, the city has a population of 178,465 (2013). Three years ago, the city began an initiative called “SmartSantander” to improve city operations and the overall quality of life for its citizens.

José Antonio Teixeira Vitienes currently serves as general director of innovation for the Santander City Council. Mr. Teixeira manages all technology for the city, including overseeing both the ICT and Innovations Department and the Smart City Department. When Santander’s current mayor was elected, Mr. Teixeira was brought to lead efforts to modernize the city’s technological infrastructure and to develop Smart City applications.

Mr. Teixeira is a telecommunications engineer and previously worked for a variety of companies related to the ITC sector. He has been in his current role for three years, since the beginning of the SmartSantander project.

Objectives

Wanting to improve efficiency in the provision of services at the lowest cost possible, the Santander city government identified information and communications technology (ICT) as the way to accomplish this objective. The goal was to improve the quality of life for citizens and to raise citizen perceptions regarding city government and management. In particular, the government wanted to give residents a greater sense of involvement in the operation of the city.

As an ancillary objective, Mr. Teixeira indicated that the city wanted to use technology implementation to help reorganize how the city is run and managed.

Strategy

Mr. Teixeira emphasized the key role mayoral support provided to the project. “A project that does not have the leadership of the mayor is a dead project,” Mr. Teixeira stated. “Leadership is fundamental.” He also commented on the important role that universities have played in the Santander initiative, saying, “We have used an asset that all the cities have and that has not really been exploited by them, and that is the universities. At the university there are some highly qualified research departments that, if well used, with a good management model and a well-established work model, provides mutual assistance that is highly beneficial for the city and for the citizens.”

Mr. Teixeira also mentioned Santander’s participation in a broader European initiative to develop Smart City applications. This helped the city decide which types of projects to pursue initially.
Solution

SmartSantander is a citywide initiative that includes a network comprised of more than 25,000 sensors. These sensors monitor traffic levels, public transportation options, noise and particulate levels, lighting levels, water quality, and parking availability. The system also provides open access to the data and allows city residents to interact remotely with city officials. The system includes multiple smartphone apps that assist in the data sharing and reporting function.

According to Mr. Teixeira, 15 gateway receivers positioned throughout the city receive data from the sensors. Each of the sensors communicates with the gateway receivers via Wi-Fi or NFC (TRF) technology. All of these gateway receivers are connected via fiber-optic cable to the central city servers. This has allowed the city to establish a platform for analysis of the data, which, according to Mr. Teixeira, allows the data to be “linked together in a more transversal and efficient way.”

Mr. Teixeira indicated that building the infrastructure and the ongoing improvements and maintenance of the project have involved many private companies, which are typically chosen through an open tender and bidding process.

Mr. Teixeira indicated that multiple mobile apps were also developed to help disseminate the data to residents in useful formats. One such app, SmartSantander RA, has been downloaded by nearly 15 percent of city residents. The app provides the timing and location of city buses, traffic information, and also informs residents about cultural events taking place in the city. A second app, City Pulse, allows residents to notify city management of incidents or issues that require attention. In addition to providing a tracking mechanism for addressing these issues, the system includes reporting capabilities. The mayor receives a weekly report on the number of incidents or issues, as well as how many have been resolved and which ones are still in progress. The city has other apps as well, for parking data and water quality measurement.

Ongoing maintenance and system development cost the city of Santander approximately US$2.75 million per year. Recently the city has engaged in public-private partnerships where private companies provide the initial capital to get a project going, then the city and the private partner share in any cost savings or added revenue generation.

The City Council (via the mayor’s office) oversees implementation of the SmartSantander project. The equipment, including the sensors, is owned and maintained by the city, with assistance from technology partners. Data gathered via the system is also owned by the city but is shared widely with the general public.

“Basically what we are seeking is efficiency in the way we provide city services to the citizens based on the use of ICT. We are implementing ICT in all the services provided to the citizens in the city, and through technology we want to allow the citizens to receive the benefits of the improvements in the way the services are provided.”

José Antonio Teixeira Vitienes,
General Director of Innovation,
Santander City
Mr. Teixeira indicated that due to less time spent by drivers looking for parking spaces downtown, traffic congestion has been reduced by 80 percent. This has not only increased convenience, but also driven reductions in vehicle emissions and fuel consumption.

Impact

Santander’s citizens have generally been very receptive to the government’s initiatives, though Mr. Teixeira indicates that helping the public see the benefit of the efforts has been one of the key challenges. Santander City has an active communication strategy that involves close cooperation with the local media.

Mr. Teixeira indicated that due to less time spent by drivers looking for parking spaces downtown, traffic congestion has been reduced by 80 percent. This has not only increased convenience, but also driven reductions in vehicle emissions and fuel consumption.

According to Mr. Teixeira, Santander’s Smart City initiatives have not only increased information flow and engagement, but have helped generate a greater sense of transparency in government across the board. Santander is also sharing data with research departments in the local university through a second platform built specifically for this purpose. The hope is that the research departments will be able to assist in better informing the city about other ways services can be improved.

Residents and visitors are the main users of SmartSantander, according to Mr. Teixeira. “They use it a lot,” he says, “because we are trying to allow them to participate in everything.” This has been important to the success of SmartSantander, as citizens have been able to “buy in” to the project as they see how it positively affects their daily lives.
Residents are also able to interact with city government in new ways. In addition to generating incident reporting, citizens can share electronic files with local governing organizations, check the status of and pay their taxes, and even pay traffic tickets at a discount. “Above all,” Mr. Teixeira says, “one of the important aspects is that they are starting to realize the true benefit of the implementation of ICT for the improvement of services.

“The [public] acceptance has been extraordinary,” he continued. “It is integrating well in the society in Santander and it has made it possible for the city to be recognized worldwide in everything that has to do with Smart City or ICT.” According to Mr. Teixeira, this was in part achieved by showing the public the value of the project from the outset; the initial projects were chosen because of their direct impact on the lives of city residents.

Lessons Learned / Next Steps

Three key lessons from Santander’s experience include the need for senior leadership and support, a strong tech foundation and system design from the outset, and coordination across various government departments and entities.

According to Mr. Teixeira, communication with residents has been the key challenge of the project. Ensuring that they are reaching out and generating interest and support has required concerted effort and attention. “The fear is that we might not be able to have the citizens see the real benefits,” he says.

Mr. Teixeira also mentioned the need to adapt both practices and legislation to bring everything into conformity as another challenge, as well as the challenge of adapting lab models to the real-world environment.

Going forward, the city of Santander plans to implement additional capabilities and to develop better benefit measurement systems.

With help from the EU, Santander also plans to conduct an energy audit for the whole city, to include street lighting and the lighting of municipal buildings. “We are going to create an energy master plan that will mark each of the things that have to be done from now until 2020 to improve the use of energy in the city,” Mr. Teixeira says. “Additionally, with that master plan and with that audit, we will establish a plan to manage the maintenance and the investments that we will need to further improve the energy infrastructure of the city.”

The city is also in the process of installing a free Wi-Fi network for residents and visitors to use at certain hotspots around the city. In the future, the city government plans to identify and implement additional measurement capabilities for tracking additional project benefits. While the city currently measures traffic volume, number of apps downloaded, and the number of city issues raised by residents via their system, Mr. Teixeira indicates there is still work to be done to capture additional data points and measure achievements.